



2021 American Pediatric Society Election Candidate

Position: Council Member
Candidate: Dr. Patrick Brophy
Candidate Institution: University of Rochester Medical Center
Candidate Subspecialty: Pediatric Nephrology

Personal Interest Statement for an American Pediatric Society Council position:

Dear Colleagues,

My interest in becoming a council member of the APS stems from an ongoing passion I have developed in working to ensure that Pediatric Health, Child Health Research and advocacy (with an eye on but not limited to our Academic Missions) are front and center on our national stage. In keeping with the APS vision of “an engaged, inclusive, and impactful community of Pediatric Thought leaders”, I would like to present my candidacy for a council member position. I wish to continue to be a servant of our entire Pediatrics community in advancing the important work outlined in the APS strategic plan. My past engagement in leadership positions in the PAS, MWSPR, ABP and ASPN have allowed me to develop a sense of the opportunity we have to speak with a larger voice to ensure we can move Child Health issues to the forefront of national conversations. During this past year we have endured a significant change in networking and identified many of the challenges that face us all. The resilience and collaborative environment that has emerged from these challenges has provided us all hope that we can work to address the needs of our APS members as well as showcase the innovative approaches that we in Pediatric Healthcare can share across our collective community. Thank you for your consideration in allowing me the opportunity to serve our community in this important role.

Respectfully,

Patrick D. Brophy MD, MHCDS

BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person. **DO NOT EXCEED FIVE PAGES.**

NAME: Brophy, Patrick D.

POSITION TITLE: Professor

eRA COMMONS USER NAME (credential, e.g., agency login): pbrophy

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

INSTITUTION AND LOCATION	DEGREE (if applicable)	Completion Date MM/YYYY	FIELD OF STUDY
University of Regina, Regina, Sask., Canada	BSc	1988	Biochemistry
University of Saskatchewan, Sask., Canada	BA (Hons.)	1992	Physiological Psychology
University of Saskatchewan, Sask., Canada	MD (Dist)	1994	Medicine
University of Michigan, Ann Arbor, MI	Fellow	2001	Clinical/Research Fellow
Dartmouth College, Tuck Business School, Dartmouth Institute, Hanover, NH	MHCDS	2013	Healthcare Delivery Sciences

A. PERSONAL STATEMENT

I am the Chair of the Department of Pediatrics and the Physician-in-Chief of Golisano Children's Hospital at Strong at the University of Rochester Medical Center. Prior to this I was the division Director of Pediatric Nephrology, Dialysis & Transplantation at the University of Iowa with more than 100 peer-reviewed publications. I have held cross appointments in the Department of Surgery and the Interdisciplinary Graduate Program in Informatics. I have experience in basic, translational, clinical healthcare delivery research and was part of the leadership team for the Integrated Special Populations component of the University of Iowa's CTSA and was part of the lifecourse research group at the CC-CHOC prior to its dissolution by the NIH. As an extension of improving clinical care access in Iowa, I founded the Signal Center for Health Innovation at the University of Iowa Health System and we developed a telehealth portfolio that remains in use for teaching and research as well. Along with these initiatives we also developed synergies with health application developers and those interested in introducing artificial intelligence applications into healthcare delivery. From a clinical research perspective, I have had a strong track record of research collaboration with the ppCRRT and ppAKI consortia, which has resulted in multiple peer reviewed publications and significantly impacted on care management of patients requiring acute dialysis and those with Acute Kidney Injury (AKI). My basic sciences laboratory and research focuses on the molecular genetics and functional mechanisms of normal and abnormal development of the kidneys and genitourinary (GU) tract. We have a genetics lab utilizing predominantly murine animal models for this work. I also have a translational interest in the field of metabolomics of neonatal acute kidney injury and am part of an international collaborative group- The AWAKEN group. I have established a collaborative group using metabolomics in the investigation of neonatal (premature infant) AKI and have also partnered with several other well-known Pediatric investigators in the area of the proteomics of Neonatal AKI as a Co-Investigator in the Recombinant Erythropoietin for Protection of Infant Renal Disease (REPaIReD) trial. As a result of my long-standing work in the area of renal development related to this work, we have initiated and developed a collaborative genetics network in the area of renal agenesis which is a condition well known to the Pediatric Nephrology community and developmental biology community.

B. POSITIONS AND HONORS**Positions**

1994-98	Pediatric Resident, Dept. of Pediatrics, University of Manitoba, Winnipeg, Manitoba, Canada
1997-98	Chief Resident, Dept. of Pediatrics, University of Manitoba, Winnipeg, Manitoba, Canada

- 1998-99 Clinical Fellow, Dept. of Pediatrics, Pediatric Nephrology Service, University of Michigan Medical Center, Ann Arbor, MI
- 1999-01 Research Fellow, Dept. of Pediatrics, Pediatric Nephrology Service, University of Michigan Medical Center, Ann Arbor, MI
- 2001-02 Lecturer, Dept. of Pediatrics, Pediatric Nephrology Service, University of Michigan Medical Center, Ann Arbor, MI
- 2002-07 Assistant Professor (Tenure Track), Dept. of Pediatrics, Pediatric Nephrology Service, University of Michigan Medical Center, Ann Arbor, MI
- 2007-13 Associate Professor, Dept. of Pediatrics and Surgery, Pediatric Nephrology Division, The University of Iowa, Iowa City, IA
- 2009-17 Associate Professor, Interdisciplinary Graduate Program in Informatics, The University of Iowa, Iowa City, IA
- 2011-17 Associate Professor, Department of Surgery, Transplantation, University of Iowa, Iowa City, IA
- 2013-17 Vice Chair Clinical Innovation, Department of Pediatrics
- 2013-17 Founder of University of Iowa Health eNovations Center
- 2013-17 Assistant Vice President eHealth & Innovation University of Iowa Healthcare
- 2015-17 Jean E. Robillard MD, Chair in Pediatric Nephrology
- 2015-17 Co-CEO University of Iowa Health Systems
- 2017-pre William H. Eilinger Chair Department of Pediatrics University of Rochester
- 2017-pre Physician-in-Chief Golisano/CEO Children's Hospital at UPMC

Other Experiences and Professional Memberships

- 2009 American Board of Pediatrics, Pediatric Nephrology Sub-Board
- 2013 Presented Annual Ganz Memorial Lecture at Mass General Hospital
- 2015 American Board of Pediatrics, Sub-Board Representative
- 2018 American Board of Medical Specialties- Finance Committee

Honors

- 1999 American Society of Nephrology Basic Science Conference Travel Grant
- 1999 American Society of Nephrology Professional Development Seminar Travel Grant
- 2000 Recipient of the 1st Annual Elizabeth E. Kennedy Foundation Award for Young Faculty Basic Science Research, Endowment through the University of Michigan
- 2001 American Society of Nephrology Carl Gottschalk Award and grant for Basic Science
- 2001 Outstanding Basic Science Research Award (Fellow Category), Society for Pediatric Research
- 2002 Young Investigator for Basic Science Research Award (Faculty Category), Dept. of Pediatrics, University of Michigan
- 2003 Wayne Jones Family Fund Award for Young Faculty Basic Science Research, Endowment through the University of Michigan (\$12,500 US)
- 2003 Young Investigator for Basic Science Research Honorable Mention (Faculty Category), Dept. of Pediatrics, University of Michigan
- 2010 Peregrine Charities Research Award (\$100,000)
- 2011 The University of Iowa Physician's Clinical Innovation Award
- 2012 Healthcare Pioneer Award- NCE/AAP
- 2017 Corridor Business Innovation Award

C. CONTRIBUTION TO SCIENCE

1. At the outset of my career in Pediatric Nephrology we were faced with the grim prospect of using adaptive machinery to perform continuous dialysis on infants. Many times these babies would develop significant hypotension and in extreme cases they would develop cardiovascular collapse. In the late 1990's early 2000's better machinery was available, yet still required caution when initiating continuous dialysis in infants. During my fellowship I developed a technique to safely place infants on continuous dialysis. This technique is still employed today and several years ago I was recognized as a healthcare hero/pioneer (for this technique) at the American Academy of Pediatrics national meeting in New Orleans. I have gone on to become a leader in the field of continuous renal replacement therapy in infants and children.
 - a) Brophy PD, Mottes TA, Kudelka TL, McBryde KD, Gardner JJ, Maxvold N J, Bunchman TE. AN-69 Membrane Reactions are pH-dependent and Preventable. Am J Kidney Dis Jul;38(1):173-8, 2001.

- b) Bunchman TE, McBryde KD, Mottes TE, Gardner JJ, Maxvold NJ, **Brophy PD**. Pediatric Acute Renal Failure: Outcome by Modality and Disease. *Pediatric Nephrology* Dec;16(12):1067-1071, 2001.
 - c) Goldstein SL, Hackbarth R, Bunchman TE, Blowey D, **Brophy PD**; Prospective Pediatric CRRT Registry Group Houston. Evaluation of the PRISMA M10 circuit in critically ill infants with acute kidney injury: A report from the Prospective Pediatric CRRT Registry Group. *Int J Artif Organs*. 2006 Dec;29(12):1105-8. doi: 10.1177/039139880602901202. PMID: 17219349
 - d) Rosner MH, Lew SQ, Conway P, Ehrlich J, Jarrin R, Patel UD, Rheuban K, Robey RB, Sikka N, Wallace E, **Brophy P**, Sloand J. Perspectives from the Kidney Health Initiative on Advancing Technologies to Facilitate Remote Monitoring of Patient Self-Care in RRT. *Clin J Am Soc Nephrol*. 2017 Nov 7;12(11):1900-1909. doi: 10.2215/CJN.12781216. Epub 2017 Jul 14. PMID: 28710094
2. I started my career in the area of developmental renal biology. I was fortunate to have an excellent mentor in Dr. Gregory Dressler. During my tenure in his laboratory we made a seminal discovery on the initiation of development of the metanephric kidney and identified a key reciprocal pathway involved. This resulted in my receipt of the SPR research fellows award and based on this work I received the American Society of Nephrology Carl Gottschalk Award and grant for Basic Science and the Society for Pediatric Research – Outstanding Basic Science Research Award (Fellows Category). I have since gone onto identify several genes involved with disorders commonly seen in the Pediatric Nephrology population that develops Chronic Kidney disease and End Stage renal disease.
- a) **Brophy PD**, Ostrom L, Lang KM, and Dressler GR. Regulation of ureteric bud outgrowth by Pax2-dependent activation of the glial derived neurotrophic factor gene. *Development* 128(23):4747-4756, 2001.
 - b) Clarke JC, Patel SR, Raymond RM Jr, Andrew S, Robinson BG, Dressler GR, **Brophy PD**. Regulation of c-Ret in the developing kidney is responsive to Pax2 gene dosage. *Hum Mol Genet* Dec 1;15(23) 2006.
 - c) Gbadegesin RA, **Brophy PD**, Adeyemo A, Hall G, Gupta IR, Hains D, Bartkowiak B, Rabinovich CE, Chandrasekharappa S, Homstad A, Westreich K, Wu G, Liu Y, Holanda D, Clarke J, Lavin P, Selim A, Miller S, Wiener JS, Ross SS, Foreman J, Rotimi C, Winn MP. Sequential Genome Wide Linkage Analysis and Exome Sequencing Identified TNXB Mutations as a Cause of Vesicoureteral Reflux (VUR). *J Am Soc Nephrol*. 2013 Jul;24(8):1313-22. PMCID: PMC3736717
 - d) **Brophy PD**, Rasmussen M, Parida M, Bonde G, Darbro BW, Hong X, Clarke JC, Peterson KA, Denegre J, Schneider M, Sussman CR, Sunde L, Lildballe DL, Hertz JM, Cornell RA, Murray SA, Manak JR. A Gene Implicated in Activation of Retinoic Acid Receptor Targets Is a Novel Renal Agenesis Gene in Humans. *Genetics*. 2017 Sep;207(1):215-228. doi: 10.1534/genetics.117.1125. Epub 2017 Jul 24. PMID: 28739660
 - e) Liang D, McHugh KM, **Brophy PD**, Shaikh N, Manak JR, Andrews P, Hakker I, Wang Z, Schwaderer AL, Hains DS. DNA copy number variations in children with vesicoureteral reflux and urinary tract infections. *PLoS One*. 2019 Aug 12;14(8):e0220617. doi: 10.1371/journal.pone.0220617. eCollection 2019. PMID: 31404082
3. In 2000 I worked closely with Dr. Stuart Goldstein and was one of the founding four members of the prospective Pediatric continuous Renal Replacement Collaborative. This group has generated the largest collaborative set of multicenter data for providing guidance on using continuous dialysis in infants and children. We have greater than 10 collaborative publications and have changed how individuals perform this therapy in children. Additionally we have developed a neonatal acute kidney injury study network and a quality improvement program for early diagnosis and mitigation of acute kidney injury.
- a) **Brophy PD**, Symons JM, Bunchman TE, Baum MA, Somers MJG, Goldstein SL. Anticoagulation in Pediatric CRRT: A Report of the ppCRRT Registry Group. *Nephrol Dial Transplant* 20(7):1416-21, 2005.
 - b) Goldstein SL, Hackbarth R, Bunchman TE, Blowey D, **Brophy PD**. Evaluation of the PRISMA M10 circuit in critically ill infants with acute kidney injury: A report from the Prospective Pediatric CRRT Registry Group. *Int J Artif Organs* Dec;29(12):1105-8, 2006.
 - c) Askenazi DJ, Goldstein SL, Koralkar R, Fortenberry J, Baum M, Hackbarth R, Blowey D, Bunchman TE, **Brophy PD**, Symons J, Chua A, Flores F, Somers MJ. Continuous Renal Replacement Therapy for Children ≤10 kg: A Report from the Prospective Pediatric Continuous Renal Replacement Therapy Registry. *J Pediatr*. 2013 Mar;162(3):587-592. jped.2012.08.044. Epub 2012 Oct 24. PMCID N/A
 - d) Charlton JR, Boohaker L, Askenazi D, **Brophy PD**, D'Angio C, Fuloria M, Gien J, Griffin R, Hingorani S, Ingraham S, Mian A, Ohls RK, Rastogi S, Rhee CJ, Revenis M, Sarkar S, Smith A, Starr M, Kent AL;

Neonatal Kidney Collaborative. Incidence and Risk Factors of Early Onset Neonatal AKI. Clin J Am Soc Nephrol. 2019 Feb 7;14(2):184-195. doi: 10.2215/CJN.03670318. Epub 2019 Jan 31. PMID: 31738181

- e) Goldstein SL, Dahale D, Kirkendall ES, Mottes T, Kaplan H, Muething S, Askenazi DJ, Henderson T, Dill L, Somers MJG, Kerr J, Gilarde J, Zaritsky J, Bica V, **Brophy PD**, Misurac J, Hackbarth R, Steinke J, Mooney J, Ogrin S, Chadha V, Warady B, Ogden R, Hoebing W, Symons J, Yonekawa K, Menon S, Abrams L, Sutherland S, Weng P, Zhang F, Walsh K. A prospective multi-center quality improvement initiative (NINJA) indicates a reduction in nephrotoxic acute kidney injury in hospitalized children. Kidney Int. 2020 Mar;97(3):580-588. doi: 10.1016/j.kint.2019.10.015. Epub 2019 Nov 1. PMID: 31980139
4. I re-established the Pediatric Nephrology, Dialysis & Transplant program at the University of Iowa. During the re-establishment I worked closely with partners at the institution to develop a unique approach to children and adults with otherwise untransplantable renal diseases – atypical Hemolytic Uremic Syndrome and Dense Deposit Disease. In 2011, I and Dr. Carla Nester developed a protocol using a newly identified medication (eculizumab) that led to the Western Hemisphere's first successful transplant of a patient with atypical Hemolytic Uremic Syndrome. I have also contributed with other publications and multiple lectures in the field.
- a) Nester CN, Jetton JG, Myers DA, Nair R, Smith RJ, Thomas C, Stewart Z, Reed A and **Brophy PD**. A protocol for eculizumab and pheresis in transplantation for atypical hemolytic uremic syndrome. Clin J Am Soc Nephrol. 2011 Jun;6(6):1488-94. PMID: PMC3109948
- b) Case report: successful treatment of recurrent focal segmental glomerulosclerosis with a novel rituximab regimen. Stewart ZA, Shetty R, Nair R, Reed AI, **Brophy PD**. Transplant Proc. 2011 Dec;43(10):3994-6. PMID N/A
- c) Nester CM, **Brophy PD**. Eculizumab in the treatment of atypical haemolytic uraemic syndrome and other complement-mediated renal diseases. Curr Opin Pediatr. 2013 Apr;25(2):225-31 PMID N/A

Over the past few years I have focused more and more on collaborative team science in the areas of big data analysis and have been a leader in the area of neonatal acute kidney injury using metabolomic analytics. I continue to develop approaches in this area with a paucity of studies. This line of research brings together all of my interests including the developmental biology of the developing human kidney, translational research focused on mechanisms of renal injury in this at risk group, clinical research focused on the incidence and prevalence of acute kidney injury in neonates and collaborative/team science partnering multicenter groups in order to acquire enough samples to have meaningful insight into short and long term outcomes in neonatal patients with acute kidney injury.

- a) Hanna MH, Segar JL, Teesch LM, Kasper DC, Schaefer FS, **Brophy PD**. Urinary metabolomic markers of aminoglycoside nephrotoxicity in newborn rats. Pediatr Res. 2013 73(5):585-91. PMID: PMC3640567
- b) Mercier K, McRitchie S, Pathmasiri W, Novokhatny A, Koralkar R, Askenazi D, **Brophy PD**, Sumner S. Preterm neonatal urinary renal developmental and acute kidney injury metabolomics profiling: an exploratory study. Pediatr Nephrol. 2017 32(1):151-161. PMID: PMC27435284
- c) Gooding JR, Agrawal S, McRitchie S, Acuff Z, Merchant ML, Klein JB, Smoyer WE, Sumner SJ; Midwest Pediatric Nephrology Consortium. Predicting and Defining Steroid Resistance in Pediatric Nephrotic Syndrome Using Plasma Metabolomics. Kidney Int Rep. 2019 Sep 19;5(1):81-93. doi: 10.1016/j.ekir.2019.09.010. eCollection 2020 Jan. PMID: 31922063
- d) Agrawal S, Merchant ML, Kino J, Li M, Wilkey DW, Gaweda AE, Brier ME, Chanley MA, Gooding JR, Sumner SJ, Klein JB, Smoyer WE; Midwest Pediatric Nephrology Consortium. Predicting and Defining Steroid Resistance in Pediatric Nephrotic Syndrome Using Plasma Proteomics. Kidney Int Rep. 2019 Sep 19;5(1):66-80. doi: 10.1016/j.ekir.2019.09.009. eCollection 2020 Jan. PMID: 31922062

URL for full list of published work:

<https://www.ncbi.nlm.nih.gov/sites/myncbi/patrick.brophy.1/bibliography/48034250/public/?sort=date&direction=ascending>

D. RESEARCH SUPPORT

COMPLETED (last 3 years)

Recombinant Erythropoietin for Protection of Infant Renal Disease (REPaReD)

National Institutes of Health: NIDDK(RO1)

9/17/2014 – 8/31/2019

Co-Investigator: Patrick Brophy, MD, MHCDS

The goal of this study: The objective of this project Recombinant Erythropoietin for Protection of Infant Renal Disease (REPaReD) - study will evaluate whether EP has a protective effect on neonatal kidneys (no cost extension)

Reduction of Nephrotoxic Medication-Associated Acute Kidney Injury in Children

Source: Agency for Healthcare Research and Quality (AHRQ)

7/1/2015 – 3/31/2017

Site PI: Patrick Brophy MD, MHCDS

The major goal of this project is to disseminate the initial nephrotoxic medication associated AKI reduction work pioneered at Cincinnati Children's Hospital to nine additional US pediatric institutions, and determine the contextual factors that enhance or present barriers to successful adoption at these institutions

2005056 Budget Amendment

Source: Amgen, Inc.

05/18/2012 – 05/18/2017

Site PI: Patrick Brophy MD, MHCDS

The goal of this study is to evaluate the safety and efficacy of infants and small children on dialysis treated with a PTH analogue

Amgen Study 20130356

Source: Amgen, Inc.

06/18/2014 – 06/18/2017

Site PI: Patrick Brophy MD, MHCDS

The goal of this study is to evaluate the safety and efficacy of children on dialysis treated with a PTH analogue

University of Iowa Clinical and Translational Science Award

Source: National Institute of Health

8/14/2015 – 7/31/2017

Co-Investigator: Patrick D. Brophy, MD, MHCDS, Co-Director of Integrated Special Populations

The goal of this study: The objective of this project is to direct the Integrated Special populations of Iowa health component of the University of Iowa's clinical and translational science award

University of Iowa Transplant Biobank

The University of Iowa

7/1/2009 – 7/1/2017

PI: Patrick D. Brophy, MD, MHCDS

The goal of this study: The objective of this project is to develop and maintain a genotyping database for genomic screening and pharmaco-genomic determinants of transplantation

eConsults/eReferrals: Improving Care at the Primary Care-Specialty Care Interface

Source: Centers for Medicare and Medicaid Innovation (awarded)

9/1/2014 – 8/31/2017

PI: Patrick D. Brophy, MD, MHCDS

The goal of this study: The objective of this project is to develop and assess an asynchronous consultation pathway for reducing costs, increasing access and improving patient care using EPIC

University of Iowa Hospitals and Clinics eHealth Extension Network Project (UIHC-eHENP)

Source: USDA- DLT awarded

11/26/2014 – 11/25/2017

PI: Patrick D. Brophy, MD, MHCDS

The goal of this study: The objective of this project is to secure rural based infrastructure resources for developing a robust eHealth platform focused on Pediatric & Geriatric care along with Medical student education